

Unicode request for modifier letters with palatal hook

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This proposal, officially supported by the International Phonetic Association after evaluation by the IPA Alphabets, Charts and Fonts Committee (Nicolaidis 2024), is a request for modifier variants of common IPA letters with palatal hooks.

Of the consonant letters with palatal hook formerly used in IPA, the coronal (tongue-tip) letters <ɿ ɺ ɻ ɣ ʒ> are the most frequent and can be expected to be the most common as modifiers. Two have long been supported in modifier form in Unicode: U+1DB5 <ɿ> and U+1DAA <ɺ>. Why voiceless <ɿ> and not voiced <ɺ>, or lateral <ɺ> and not nasal <ɻ>, is an accident of attestation. The three coronal modifiers <ɺ>, <ɻ> and <ɿ> are now attested, along with <ɿ> (see figures; <ɿ> for [tʰ] is analogous to <kʷ> for [kʷʰ]). One would think that the nasal <ɻ> would occur in prenasalized [ɻɺ], as equivalent to Sinological para-IPA <ɻɺ>, because modifier nasal letters are commonly used to indicate prenasalization, but it has not yet been found. The International Phonetics Association, after evaluation by its Alphabet, Charts and Fonts Committee (Nicolaidis 2023), requests Unicode support for these characters, including <ɻ> as an accidental gap. Note that <ɸ> (modifier Latin phi with palatal hook) is also attested (Figure 5), but this is felt to be too idiosyncratic a character to encode without broader support of modifier letters with palatal hook.

Thanks to Denis Moyogo Jacquerye for his feedback and several of the references illustrated below.

Characters

Modifier letters with palatal hook

- ɿ 1DFF5 MODIFIER LETTER SMALL D WITH PALATAL HOOK. Figure 1.
- ɺ 1DFF6 MODIFIER LETTER SMALL H WITH PALATAL HOOK. Figure 4.
- ɻ 1DFF7 MODIFIER LETTER SMALL N WITH PALATAL HOOK. Letter of IPA support.
- ɣ 1DFF8 MODIFIER LETTER SMALL S WITH PALATAL HOOK. Figure 2 *ff*.
- ʒ 1DFF9 MODIFIER LETTER SMALL Z WITH PALATAL HOOK. Figure 2 *ff*.

Properties

1DFF5;MODIFIER LETTER SMALL D WITH PALATAL HOOK;Lm;0;L;<super> 1D81;;;N;;;;;
 1DFF6;MODIFIER LETTER SMALL H WITH PALATAL HOOK;Lm;0;L;<super> A795;;;N;;;;;
 1DFF7;MODIFIER LETTER SMALL N WITH PALATAL HOOK;Lm;0;L;<super> 1D87;;;N;;;;;
 1DFF8;MODIFIER LETTER SMALL S WITH PALATAL HOOK;Lm;0;L;<super> 1D8A;;;N;;;;;
 1DFF9;MODIFIER LETTER SMALL Z WITH PALATAL HOOK;Lm;0;L;<super> 1D8E;;;N;;;;;

DoNotEmit data

For historical reasons, IPA letters with palatal hook are not canonically equivalent to the letter plus the palatal hook diacritic. They should thus be listed in DoNotEmit.txt.

1D48 0321; 1DF25; Precomposed_Form # MODIFIER LETTER SMALL D, COMBINING PALATALIZED HOOK BELOW; MODIFIER LETTER SMALL D WITH PALATAL HOOK

02B0 0321; 1DF26; Precomposed_Form # MODIFIER LETTER SMALL H, COMBINING PALATALIZED HOOK BELOW; MODIFIER LETTER SMALL H WITH PALATAL HOOK

207F 0321; 1DF27; Precomposed_Form # SUPERSCRIPT LATIN SMALL LETTER N, COMBINING PALATALIZED HOOK BELOW; MODIFIER LETTER SMALL N WITH PALATAL HOOK

02E2 0321; 1DF28; Precomposed_Form # MODIFIER LETTER SMALL S, COMBINING PALATALIZED HOOK BELOW; MODIFIER LETTER SMALL S WITH PALATAL HOOK

1DBB 0321; 1DF29; Precomposed_Form # MODIFIER LETTER SMALL Z, COMBINING PALATALIZED HOOK BELOW; MODIFIER LETTER SMALL Z WITH PALATAL HOOK

References

Charles-James Bailey (1985) *English phonetic transcription*. SIL.

S. C. Boyanus (1955) *Russian pronunciation: the Russian system of speech habits in sounds, stress, rhythm, and intonation, together with a Russian phonetic reader*. Harvard University Press.

John Kelly & John Local (1989) *Doing Phonology*. Manchester University Press.

Katerina Nicolaidis (2024) 'Unicode support for historical and para-IPA letters.' Letter submitted to the Unicode Technical Committee, 01 January 2024. [L2/24-049](#).

Cynthia Shuken (1980) *Instrumental investigation of some Scottish Gaelic consonants*. University of Edinburgh.

Chart

Greyed out cells are assigned (medium grey) or proposed elsewhere (light grey).

Latin Extended-G

1DF00

1DFFF

	1DF0	1DF1	1DF2	1DF3	1DF4	1DF5	1DF6	1DF7	1DF8	1DF9	1DFA	1DFB	1DFC	1DFD	1DFE	1DFF
0	ƒŋ	ɣ	ɔ̥	ɟ												
1	ɸ	ɮ	ɔ̥	ɟ												
2	ɔ̥	ɔ̥	ɮ	ɮ												
3	ɣ	ɮ	ɮ	ɮ												
4	ɣ	ɮ	ɮ	ɮ												
5	ɮ	ɮ	ɮ	ɮ												ɮ
6	ɮ	ɮ	ɮ	ɮ												ɮ
7	ɮ	ɮ	ɮ	ɮ												ɮ
8	ɮ	ɮ	ɮ	ɮ												ɮ
9	ɮ	ɮ	ɮ	ɮ												ɮ
A	ɮ	ɮ	ɮ	ɮ												ɮ
B	ɮ	ɮ	ɮ													ɮ
C	ɮ	ɮ	ɮ													ɮ
D	ɮ	ɮ	ɮ													ɮ
E	ɮ	ɮ	ɮ													ɮ
F	ɮ	ɮ	ɮ													ɮ

Figures

foregoing, begins its [d̥r̥] and palatalized [d̥r̥ʲ] with a closure resembling [d] or [d̥]. The air pressure built up in vibrants

Figure 1. Bailey (1985: 107). Modifier ^{d̥} for Marshallese, in a palatalized trill with plosive onset [d̥r̥ʲ].

continuant z, the result will be very Russian. It is particularly offensive to the native ear when the infinitive ending [tʲs̚] is spoken as an ordinary English t.

Note: Palatalised t with its palatalised off-glide s̚ in [tʲs̚tʲs̚] (тятя daddy) may be compared with non-palatalised t in 'tata (see Chap. IV, examples to §1).

The palatalised d with its palatalised off-glide z̚ may be compared with the dz in Polish. In Western Belorussian t and d appear as affricates tʃ, dʒ.

Practise¹: [tʃa, tʃo, tʃu] [dʒa, dʒo, dʒu]

Figure 2. Boyanus (1955: 17). Modifier ^{s̚} and ^{z̚} for plosives with palatalized off-glide [tʲs̚] and [dʲz̚] in Russian, as opposed to the palatalized affricates [tʲʃ] and [dʲʒ] in Belarusian. [tʲs̚] is phonemic /tʲ/ (Cyrillic тʲ), [tʲʃ] phonemic /tʲʃ/ (Cyrillic тʲʃ).

[t(ʔ) ^ʲ tʲ ^ʲ] church; also [tʲ ^ʲ ʃ]	Palatalized (Convex dorsum)
t ^s tʲ ^{s̚}] in SE, IrE	
[dʲ ^ʲ] ([dʲ ^ʲ ʒ]) judge; also [dʲ ^ʲ ʒ]	
d ^z dʲ ^{z̚}] in SE, IrE	
	[tʲ ^{s̚}]
	[dʲ ^{z̚}]
	[ʃ]
	[ʒ]

Figure 3. Bailey (1985: xxi, 17). Left: Modifier ^{s̚} and ^{z̚} in Scottish and Irish English pronunciations [tʲ^{s̚}] and [dʲ^{z̚}] of /tʃ/ and /dʒ/. (The right hooks that follow reflect a retroflex rhotic influence.) Right: [tʲ^{s̚}, dʲ^{z̚}] are defined as palatalized. (The difference between [ʃ ʒ] and [ʃ̚ ʒ̚] is that [ʃ ʒ] are apical and [ʃ̚ ʒ̚] laminal.)

variation between preaspirated stops and fricative-plus-stop clusters, e.g. in ite, [i^ht̪ə] or [içt̪ə] "feather", after short, stressed [i], with the preaspirated stop occurring more frequently than the cluster.

Outside this environment, this free variation occurs in two other words: suipear [sɪi^hpaɪ] ~ [sɪiçpaɪ] "supper" and tilgte [t̪^hili^ht̪ə] ~ [t̪^hiliçt̪ə] "artificial".

Phonetically, [h̥] and [ç] are seen as being near opposite poles

Figure 4. Shuken (1980: 79). Palatalized aspiration and pre-aspiration [h̥] in the Applecross dialect of Scots Gaelic. Otherwise [h̥] is essentially [j̥].

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b⁺ [ɸ] ~ (ɸ̃)

ɸ = bottom lip in
lips tensed laterally

he caned him (Fante)

Figure 5. Kelly & Local (1989: 90). <ɸ> is a modifier letter indicating the tension of the lips in [ɸ].

ISO/IEC JTC 1/SC 2/WG 2
**PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
 FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646¹.**

Please fill all the sections A, B and C below.

Please read Principles and Procedures Document (P & P) from std.dkuug.dk/JTC1/SC2/WG2/docs/principles.html for guidelines and details before filling this form.

Please ensure you are using the latest Form from std.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html.
 See also std.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html for latest *Roadmaps*.

A. Administrative

1. Title:	<i>Modifier letters with palatal hook</i>
2. Requester's name:	<i>Kirk Miller</i>
3. Requester type (Member body/Liaison/Individual contribution):	<i>individual</i>
4. Submission date:	<i>2024 April 30</i>
5. Requester's reference (if applicable):	
6. Choose one of the following:	
This is a complete proposal:	<i>yes</i>
(or) More information will be provided later:	

B. Technical – General

1. Choose one of the following:	
a. This proposal is for a new script (set of characters):	<i>no</i>
Proposed name of script:	
b. The proposal is for addition of character(s) to an existing block:	<i>yes</i>
Name of the existing block:	<i>Latin Extended-G</i>
2. Number of characters in proposal:	<i>5</i>
3. Proposed category (select one from below - see section 2.2 of P&P document):	
A-Contemporary <input checked="" type="checkbox"/> B.1-Specialized (small collection) <input type="checkbox"/> B.2-Specialized (large collection) <input type="checkbox"/>	
C-Major extinct <input type="checkbox"/> D-Attested extinct <input type="checkbox"/> E-Minor extinct <input type="checkbox"/>	
F-Archaic Hieroglyphic or Ideographic <input type="checkbox"/> G-Obscure or questionable usage symbols <input type="checkbox"/>	
4. Is a repertoire including character names provided?	<i>yes</i>
a. If YES, are the names in accordance with the “character naming guidelines” in Annex L of P&P document?	<i>yes</i>
b. Are the character shapes attached in a legible form suitable for review?	<i>yes</i>
5. Fonts related:	
a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?	<i>Kirk Miller</i>
b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):	<i>SIL (Gentium Release)</i>
6. References:	
a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?	<i>no</i>
b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?	<i>no</i>
7. Special encoding issues:	
Does the proposal address other aspects of character data processing (if applicable) such as input, presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)?	<i>no</i>

8. Additional Information:
 Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script. Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization related information. See the Unicode standard at www.unicode.org for such information on other scripts. Also see Unicode Character Database (www.unicode.org/reports/tr44/) and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

¹ Form number: N4502-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11, 2011-03, 2012-01)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? If YES explain	<i>no</i>
2. Has contact been made to members of the user community (for example: National Body, user groups of the script or characters, other experts, etc.)? If YES, with whom? If YES, available relevant documents:	<i>yes</i> <i>International Phonetic Association, regarding accidental gaps.</i> <i>Nicolaidis (2024)</i>
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included? Reference:	
4. The context of use for the proposed characters (type of use; common or rare) Reference:	<i>phonetic</i>
5. Are the proposed characters in current use by the user community? If YES, where? Reference:	<i>yes</i> <i>See figures</i>
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP? If YES, is a rationale provided? If YES, reference:	<i>no</i>
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?	<i>yes</i>
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence? If YES, is a rationale for its inclusion provided? If YES, reference:	<i>no</i>
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters? If YES, is a rationale for its inclusion provided? If YES, reference:	<i>no</i>
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to, or could be confused with, an existing character? If YES, is a rationale for its inclusion provided? If YES, reference:	<i>no</i>
11. Does the proposal include use of combining characters and/or use of composite sequences? If YES, is a rationale for such use provided? If YES, reference: Is a list of composite sequences and their corresponding glyph images (graphic symbols) provided? If YES, reference:	<i>no</i> <i>no</i>
12. Does the proposal contain characters with any special properties such as control function or similar semantics? If YES, describe in detail (include attachment if necessary)	<i>no</i>
13. Does the proposal contain any Ideographic compatibility characters? If YES, are the equivalent corresponding unified ideographic characters identified? If YES, reference:	<i>no</i>